

1 CLAIMS

2 What is claimed is:

1 1. A network switch having an asynchronous mesh to transfer data from
2 ingress interfaces to egress interfaces, the ingress interfaces to receive data from external
3 sources and to selectively transmit the data across the asynchronous mesh to the egress
4 interfaces, the egress interfaces to receive data from the asynchronous mesh and to
5 transmit the data to external destinations.

1 2. The network switch of claim 1 wherein the ingress interfaces schedule
2 respective data transmissions across the mesh and the egress interfaces schedule
3 respective data transmissions to the external destinations.

1 3. The network switch of claim 2 comprising N ingress interfaces, each of
2 the egress interfaces further comprising N independent cache buffers coupled to N
3 respective ingress interfaces to receive data from the respective N ingress interfaces.

1 4. The network switch of claim 2 comprising N ingress interfaces, each of
2 the N ingress interfaces having N independent cache buffers, each of the N independent
3 cache buffers coupled to one of N respective egress interfaces.

1 5. The network switch of claim 2 wherein one or more of the N ingress
2 interfaces segregates incoming data into queues based on one or more of: a flow

3 identifier, a user identifier, a session identifier, a quality of service (QoS), a priority, a
4 deadline, and a service class.

1 6. The network switch of claim 3 in which the egress interfaces generate a
2 flow control signal to prevent access to one or more of the N buffers of the respective
3 egress interfaces.

1 7. The network switch of claim 3 wherein the egress interfaces generate a
2 flow control signal to prevent transmission to one or more of the N buffers of the
3 respective egress interfaces.

1 8. The network switch of claim 3 wherein the N ingress interfaces transfer
2 data to a shared egress buffer and further wherein the egress interfaces schedule and
3 retrieve the data stored in the shared egress buffer prior to transmitting the data to the
4 external destinations.

1 9. The network switch of claim 5 in which the egress interfaces generate a
2 flow control signal to prevent access by one or more of the queues at the ingress
3 interfaces to the egress buffer.

1 10. The network switch of claim 3 in which the N ingress interfaces
2 concurrently transmit fixed-length cells and variable-length packets across the mesh to
3 the egress interfaces.

3 respective ingress cards, and further wherein if a buffer of a port of an egress card is full
4 the buffer and the port refuse data transmitted from the associated ingress card.

1 16. The network switch of claim 15 wherein the associated ingress card from
2 which data was refused retransmits the refused data until the associated egress port and
3 buffer accept the previously refused data.

1 17. The network switch of claim 11 wherein the egress buffers include a data
2 store for each of the plurality of ports of the egress card.

1 18. The network switch of claim 17 wherein the data store for each of the
2 plurality of ports of the egress card stores the data according to an associated class.

1 19. A network switch comprising:
2 N ingress cards coupled to receive data from external sources, the N ingress cards
3 having a plurality of ports to transmit data, wherein each of the N ingress cards comprises
4 an ingress scheduler coupled to the ports of the ingress card, the ingress scheduler to
5 cause data to be selectively and asynchronously transmitted via the ports of the ingress
6 card; and

7 M egress cards having ports coupled to receive data from one or more of the
8 plurality of ports of the N ingress cards, the egress cards coupled to transmit data to
9 external destinations, wherein each of the M egress cards comprises an egress scheduler

10 coupled to the ports of the egress card, the egress scheduler to cause data to be selectively
11 transmitted to the external destinations.

1 20. The network switch of claim 19 wherein N and M are equal.

1 21. The network switch of claim 19 wherein one or more of the ingress
2 interfaces segregates incoming data into queues based on one or more of: a flow
3 identifier, a user identifier, a session identifier, a quality of service (QoS), a priority, a
4 deadline, and a service class.